

**NASA - International Space Station**  
***Kids in Micro-g Challenge***

**FAQ -- Questions From / Answers To Potential Challenge Entrants**

**Most Current Update: Tuesday, October 20, 2010, 5:00 p.m. CT**

<b>Question Number</b>	<b>Question</b>	<b>Answer</b>
<b>1</b>	Would it be possible to say fill a zip-lock bag with something prior to take-off and seeing the reaction up in space?	No, we regret we cannot launch a bag of something and see the reaction in space.
<b>2</b>	I know that there is no water on the supply list but I was wondering if you were going to add it in November.	Yes, up to 4 oz. of cold water per experiment is available.
<b>3</b>	Are you allowed to have batteries in a flashlight, or does the flashlight have to be solar powered?	The flashlights are battery-powered.
<b>4</b>	I was wondering if we could submit multiple entries?	Yes, each educator may submit up to 10 entries.
<b>5</b>	Would it be possible to melt a pair of scissors or a paperclip in space using a magnifying glass? Or would this be impossible?	No, melting a pair of scissors or a paperclip in space using a magnifying glass would not be permitted for <i>Kids in Micro-g</i> experiments conducted aboard the International Space Station (ISS). The only combustion allowed to take place on board ISS is in carefully controlled experiment racks.

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6	<p>I was wondering if you could add salt to the materials list because you don't have a powdery substance and I found a chemical reaction using ketchup and salt.</p> <p>How much of the condiments will there be?</p>	<p>There is liquid salt available on board the International Space Station, but powdery or granular substances are restricted because they can get free in the air.</p> <p>The amount of condiments available depends on what the student(s) want to use it for and how much. Condiments are sent up at the crew's discretion, so the condiments that are on board right now are not necessarily the same as what will be up there when the experiments are performed, because again, each crew picks out their own.</p> <p>If the students who want to use condiments can give us an idea of what they want to use and how much, this issue can be checked with and discussed with the Astronaut Crew Office about getting requests included.</p>
7	<p>I was wondering, will water be added to the available materials list? It would be very helpful.</p>	<p>Yes, up to 4 oz. of cold water per experiment is available.</p>
8	<p>Is it possible for anything to be added to the list of supplies? I'm interested in using magnets, but if this is not possible I understand completely.</p>	<p>Magnets are not available. The only supplies available for use are those contained in the full list at <a href="http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html">http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html</a></p>
9	<p>Hi, I was wondering that in the project Kids In Micro-G that if you are allowed to work with other people also saying if you can have a partner on it.</p>	<p>The intent is that the students will work in groups, lead by their teacher or educator. The teacher/educator will be the person responsible for submitting proposals on the behalf of the student groups. These details are covered in the submission instructions posted at the <i>Kids in Micro-g</i> Web site at <a href="http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html">http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html</a></p>

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10	I don't live in America, so am I allowed to participate?	NASA is currently considering a contest for the next school year that could involve students from other countries, in conjunction with the international space agencies participating in the International Space Station program. There will also be additional opportunities for similar participation for grades 9-12 as well as university level students. Please continue to follow NASA and the ISS program for information on these future opportunities.
11	Can homeschoolers be a part of kids in micro and is this where we send our kids in micro project?	Yes, home-schoolers in grades 5-8 course of study can participate. As with all participants, the entries must be submitted by an adult educator/teacher.
12	When is the deadline for this contest?	NASA will be accepting experiment proposals from Monday, October 18, 2010, through 11:59pm CST, Wednesday, December 8, 2010.. The winning proposals will be announced on Monday, January 31, 2011. Instructions for experiment proposal submissions are also posted at the <i>Kids in Micro-g</i> challenge Web site at <a href="http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html">http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html</a> .
13	Is there a list of materials that can be used located somewhere, other than included in a classroom?	The materials list can be found on the <i>Kids in Micro-g</i> challenge Web site at <a href="http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html">http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html</a> .
14	I was wondering if Canadian students could enter the competition?	Thank you very much for your question and your interest. The <i>Kids In-Micro-g</i> challenge is only open to grades 5-8 in the United States. NASA is currently considering a contest for the next school year that could involve students from other countries, in conjunction with the international space agencies participating in the International Space Station program. There will also be additional opportunities for similar participation for grades 9-12 as well as university level students. Please continue to follow NASA and the ISS program for information on these future opportunities.

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15	Are there any such zero-g challenges/possibilities for grade 2 students?	The determination of grade level for student participation in <i>Kids In Micro-g</i> was based on a review of standards for science curriculum content at primary grade levels. From this review, it was determined that grades 5-8 would be the optimum grade levels to introduce students to microgravity concepts.
16	Can high school students participate and submit proposals?	This particular <i>Kids In-Micro-g</i> challenge is only open to grades 5-8 in the United States. NASA is currently considering a contest for the next school year that could involve students from other countries, in conjunction with the international space agencies participating in the International Space Station program. There will also be additional opportunities for similar participation for grades 9-12 as well as university level students. Please continue to follow NASA and the ISS program for information on these future opportunities.
17	Are the condiments in bottles or in small sealed packets?	The condiments are in individual packets.
18	What size are the rubber bands?	The rubber bands are the standard size used for office supply.
19	What is Nomex cord? What is a Nomex blue backdrop with grid?	Nomex is a strongly fire-resistant fabric and it's used in bungee cords, string, and the gridded backdrop. The backdrop is nothing more than a flat panel of Nomex.

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20	Where can I find information on the kinds of experiments students have sent on the Space Stations in the past? I found some references to some experiments, but no details about them.	<p>One area similar to what we are doing here is the DIME &amp; WING program at NASA/Glenn Research Center. DIME &amp; WING stands for “Dropping In a Microgravity Environment - What If No Gravity?” Information on the experiments being conducted through the DIME &amp; WING program is located at <a href="http://spaceflightsystems.grc.nasa.gov/DIME.html">http://spaceflightsystems.grc.nasa.gov/DIME.html</a>.</p> <p>It is also recommended to look at information regarding the Education Payload Operation-Demonstrations (EPO-Demos) experiments being conducted, which you can find at <a href="http://www.nasa.gov/mission_pages/station/science/experiments/EPO-Demos.html">http://www.nasa.gov/mission_pages/station/science/experiments/EPO-Demos.html</a>, as well as what is described at the <i>Teaching From Space</i> website at <a href="http://www.nasa.gov/audience/foreducators/teachingfromspace/home/index.html">http://www.nasa.gov/audience/foreducators/teachingfromspace/home/index.html</a>.</p> <p>The Reduced Gravity Flight Program here at NASA/JSC is geared towards college students and is very technical, however, if you wish to learn more, please see <a href="http://microgravityuniversity.jsc.nasa.gov/">http://microgravityuniversity.jsc.nasa.gov/</a> and <a href="http://microgravityuniversity.jsc.nasa.gov/se/">http://microgravityuniversity.jsc.nasa.gov/se/</a></p> <p>Finally, for more general information about NASA's education programs, please visit <a href="http://www.nasa.gov/education">http://www.nasa.gov/education</a>.</p>
21	In the supplies in the condiments- oil and vinegar are not included, are they permitted?	We would be hesitant to permit anything that was not on the published list as that item(s) would be an uncontrolled variable(s) in the experiment. The goal is to make the experiments performed on-orbit as identical as possible to those on the ground.

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22	<p>Are the following materials available to use in the design challenge?</p> <p>2 small magnet 1 large magnet popsicle sticks hot glue/glue gun 1 sheet of tissue (kleenex) 1 small plastic bowl</p>	<p>Only the materials that are published on the list posted at the <i>Kids in Micro-g</i> Web site  <a href="http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html">http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html</a>  are available for use in the challenge.</p>
23	<p>What is the maximum/minimum number size of student groups for this contest?</p>	<p>NASA does not have a requirement for the maximum or minimum number of students in a student group. This is a decision of the educator who will ultimately be submitting the experiment proposal to us. Our desire is that the student group is of a size that will facilitate learning for all members of the group as they work on the concepts for, and design of, the experiment proposal.</p>
24	<p>I saw your article about the Kids In Micro-g challenge and noticed that the students are to use materials from a specific kit that can be obtained from NASA. I would like to know how much these kits are and how to obtain them?</p>	<p>The kits cannot be obtained from NASA but the contents of the available items can be obtained on the <i>Kids In Micro-g</i> Web page. The available items are commonly found in classrooms or are otherwise readily available to your educator. We ask that you construct your experiment using only materials on this list.</p>
25	<p>Are there any other items on-board that are acceptable that aren't on the list, for instance, test tubes?</p>	<p>Structural materials and containers not on the list will be disqualified.</p>
26	<p>If water is involved in our experiment what are the design constraints?</p>	<p>One of the goals of this exercise is to teach students how to be innovative within the same constraints the crew experiences every day. For example, Astronaut Don Pettit built a barn door tracker during Expedition 6 with spare parts.</p> <p>All selected experiments will be subject to scrutiny by the Payload Safety Review Panel. They will be looking for fire, electrical hazards, mechanical, and crew health hazards, among others. If water is a part of the experiment, consider how its use might present a hazard to the crew and/or their equipment.</p>

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27	For the Kids in Micro-g project: can I use video to explain the instructions/process of my project? Also, can I use MacBook applications (such as Pages and Keynote)? These applications are basically the same as Word and PowerPoint.	We regret we cannot accept video explanations or the use of any other computer software applications other than Adobe Acrobat (pdf documents) as submissions for the instructions/process of planned projects. These guidelines were given in an attempt to adhere to the most currently standardized use and availability of software applications not only for the contest entrants but for the potential evaluators as well, and diminishes a possibility of incompatibility along the way.
28	I'm trying to find out what email address to send current proposals to. I could not find it on your website.	You may send your proposals to this same email address that you submitted your question: <a href="mailto:jsc-iss-payloads-helpline@mail.nasa.gov">jsc-iss-payloads-helpline@mail.nasa.gov</a>
29	My students are wondering if the markers in the list are water soluble?	The highlighters are water soluble, however the Sharpies, including the colored pens, are not.
30	Is there a size/weight limit to the proposed experiment (either before assembly or fully assembled)?	The size and weight of the proposed experiment are restricted to the work space available within the dimensions of the International Space Station's Destiny Laboratory. Those specs can be found and reviewed at the following Web site: <a href="http://www.nasa.gov/pdf/167120main_Elements.pdf">http://www.nasa.gov/pdf/167120main_Elements.pdf</a> .  Also, please keep in mind that all the proposals will be reviewed by NASA's Office of Education for feasibility and by the Payload Safety Review Panel for safety, potential hazards, and any clearance issues.
31	I do not know if I am just overlooking this somewhere on the microgravity site or what. How many students can be in a group of experiments submitted? Can I enter all my student groups?	There is no limit to size of an individual student group. Group size is at the discretion of the educator. A single educator can submit up to 10 different experiment proposals developed by different student groups.
32	I was wondering if there could be a deflated balloon or a nail on the space craft for the experiment?	No, unfortunately there are no free-floating nails aboard ISS, as they would present a safety hazard. Also, there have not been any balloons located in any of the catalogs or lists of personal items that have been brought on board ISS.

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33	Could you have wire (on-board)?	No wire is available on-board. The only supplies available for use are those contained in the full list at <a href="http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html">http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html</a>
34	We are wondering if you have something like the following (on board ISS): matches, bottle, and a boiled egg.	The only supplies available for use are those contained in the full list at <a href="http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html">http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html</a>
35	We are assuming there is a table-like surface that our apparatus can be anchored to using duct tape. What are the dimensions of this surface?	Yes, there is a maintenance work area that can be used as a flat surface if a table surface is needed. The Maintenance Work Area is 36 inches by 25 inches.
36	<p>1) I have some students participating in the kids in micro-g contest and some students have designed experiments using the nomex grid. Where do we buy this? I found some 48" X 64" nomex online but it was \$42 for one piece.</p> <p>2) Also, does it have a grid on it or is it just called a grid?</p> <p>3) If it has a grid on it, how far apart are the grid lines?</p> <p>4) And if we can't get it anywhere, will my students be disqualified for using a whiteboard that they drew gridlines on instead of the nomex grid?</p> <p>5) And is the engineering pad made of paper or is it laminated? The engineering pad is just special graph paper right?</p> <p>6) Oh, and can we assume that there are cameras or video available for stop frame data collection since you are going to broadcast the video of the experiment if it is chosen?</p>	<p>1) You do not need to purchase a blank piece of Nomex® since you would have to trace your own grid on it, anyways. The backdrop was produced in-house with the grid printed on it and intended for use in Education Payload Operations (EPO) experiments being conducted on board ISS. The Nomex® is only important on-orbit because it is fire-retardant, and so the crew will use the Nomex® backdrop that is indeed on orbit. The students can use any reasonable facsimile. Any other material with a 1" by 1" grid on it will work, as long as the grid is clearly visible.</p> <p>2) Yes there is a grid on it.</p> <p>3) The grid is 1" x 1".</p> <p>4) No. An accurate reproduction of the grid made by the students would be sufficient.</p> <p>5) The engineering pad is a paper pad with the standard engineering paper layout.</p> <p>6) The video of the experiment will be made available.</p>



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37	<p>I am writing regarding the kids in micro-g [video] modules 1 – 4 [posted on your Web site]. I am working with educators in a school district running on Macs rather than PCs. Streaming the videos is cumbersome through the Mac interface and time consuming for the classroom format. The school district won't grant me a network password, so I thought that if I could get a hard copy of the files, I would run them from my PC Laptop. Are there individual files that could be downloaded to my local drive for show in the class room? As usual, this needed to be done yesterday, so to speak. I just became aware of the problem and the classroom presentation is 9am tomorrow morning PST (Portland, OR). Any help or guidance resolving this hick-up would be much appreciated.</p>	<p>Yes, we can send you the individual video files (in .wmv format) that are posted at <a href="http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html">http://www.nasa.gov/mission_pages/station/science/nlab/experimentchallenge.html</a>. Please note, however, these files range from 6mb to 19mb each so we will need to set up a way to transmit them to you, e.g., a dropbox or ftp site.</p>
38	<p>I have a practical question about the experiments that the students I am working with might be conducting. I mentioned fluid physics in our call earlier.</p> <p>1) If water is available, how is it stored and deployed for the experiment?</p> <p>2) Can we ask that the water be deployed from a pipette or similar applicator?</p> <p>3) Also, I noticed that there are plastic bottles on the manifest. Is that the only option for measuring the liquids?</p> <p>4) Or is there a water delivery device that might be employed and we can use the grid in the background to calculate the growth of the pool? Many thanks.</p>	<p>1) We recommend the drink bags be used if the experiment is to deploy the water, as the crew is familiar with them and has used drink bags before for Education Payload Operations activities. Each holds a maximum of 12 ounces of water. 4 oz. of water per experiment is permitted for your use.</p> <p>2) Same as above. And, water can be deployed using the 6ml syringe.</p> <p>3) Measuring cups are not as useful on-orbit. Closed containers with known volumes are the best options for measuring liquids. The drink bag holds up to 12 ounces of liquid.</p> <p>4) Yes, the drink bags could be used in this manner.</p>
39	<p>Can you freeze ice to make water for your experiment?</p>	<p>No, we do not have access to the on-board freezers for this activity, as they are considered mission-essential facilities.</p>